

TRANSFORMER INFORMATION DOCUMENT

Energy Efficient Transformers – Canada 2019 Low Voltage Efficiency Requirements

Revised February 2019

Summary

Since January 1, 2005, low voltage dry-type distribution transformers have been subject to Canada's Energy Efficiency Act and Regulations. These regulations required that dry-type transformers sold in Canada meet minimum energy performance levels of the CAN-CSA C802.2 and report energy efficiency verified performance data to Natural Resources Canada (NRCAN). Transformers that meet the TP-1 efficiency standard inherently met the Canadian C802.2.12 standard. The CSA C802.2 exempt unit list is slightly different from the DOE-2016 standard.

In January 2018 the province of Ontario started requiring units delivered meet new Reg. 404/12 efficiency levels. These levels are harmonized with the USA DOE-2016 levels. As of May 1 2019 all of Canada will require these same levels of efficiency defined in the updated C802.2.14.

The Canadian regulations also require manufacturers to have the efficiency testing verified by an independent testing facility. Jefferson units are labelled showing ETL verified or CSA verified, complying with this requirement.

Efficiency levels C802.2 (TP1) and NRCAN-2019 (DOE-2016)

Single Phase

kVA	C802TP1/DOE Efficiency Level (%)
15	97.7
25	98.0
37.5	98.2
50	98.3
75	98.5
100	98.6
167	98.7
250	98.8
333	98.9

Three Phase

kVA	C802/TP1 Efficiency Level (%)	NRCAN-2019/DOE-2016 Efficiency Level (%)
15	97.00	97.89
30	97.50	98.23
45	97.70	98.40
75	98.00	98.60
112.5	98.20	98.74
150	98.30	98.83
225	98.50	98.94
300	98.60	99.02
500	98.70	99.14
750	98.80	99.23
1000	98.90	99.28

Definitions

C802.2 The Canadian standards for the energy efficiency performance of transformers. The 2016 levels defined as C802.2.12, the new levels specified in 2019 as C802.2.14

NRCan Natural Resources Canada, the government body defining the efficiency requirements. We are using NRCan-2019 as shorthand for the newest standard.

Low-voltage dry-type distribution transformers

The following transformers must meet the NRCan Efficiency levels with a 35% load and a temperature of 75 degrees Centigrade.

- Input voltage of 34.5 kilovolts or less
- Output voltage of 600 volts or less
- Rated for operation at a frequency of 60 Hertz
- Rated capacity of 15 kVA to 1,000 kVA
- Air-cooled

Efficiencies are determined at the following reference conditions:

- (1) For no-load losses, at the temperature of 20°C, and
- (2) For load losses, at the temperature of 75°C and 35 percent of nameplate load.

Transformers not covered by Canadian efficiency standard

- Autotransformer
- Drive (isolation) transformers with two or more output windings or a nominal low-voltage line current greater than 1,500 Amp
- Grounding transformer
- Non-ventilated transformer (TENV)
- Rectifier transformer
- Sealed transformer
- Encapsulated transformer
- Special-impedance transformer
- Welding transformer
- Transformers with a nominal low-voltage line current of 4000 Amp or more
- On-load regulating transformer
- Resistance grounding transformer

Jefferson Electric and Bemag Transformers maintain high levels of compliance with regulations in the USA and Canada. We do so as a part of our commitment to customer satisfaction along with energy and cost savings. Contact us if you have any questions.

